

***What is claimed is:***

1. An isolated nucleic acid molecule comprising a polynucleotide having a sequence at least 95% identical to a sequence selected from the group consisting of:
  - 5 (a) a nucleotide sequence encoding a human sel-10 polypeptide having the complete amino acid sequence selected from the group consisting of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, and SEQ ID NO:7, or as encoded by the cDNA clone contained in ATCC Deposit No.98978;
  - 10 (b) a nucleotide sequence encoding a human sel-10 polypeptide having the complete amino acid sequence selected from the group consisting of SEQ ID NO:8, SEQ ID NO:9, and SEQ ID NO:10, or as encoded by the cDNA clone contained in ATCC Deposit No. 98979; and
  - 15 (c) a nucleotide sequence complementary to the nucleotide sequence of (a) or (b).
2. An isolated nucleic acid molecule comprising polynucleotide which hybridizes under stringent conditions to a polynucleotide having the nucleotide sequence in (a), (b), or (c) of claim 1.
- 20 3. The nucleic acid molecule of claim 1, wherein said polynucleotide of 1(a) encodes a human sel-10 polypeptide having the complete amino acid sequence of SEQ ID NO:3.
- 25 4. The nucleic acid molecule of claim 3, wherein said polynucleotide molecule of 1(a) comprises the nucleotide sequence of residues 45-1928 of SEQ ID NO:1.
- 30 5. The nucleic acid molecule of claim 1, wherein said polynucleotide of 1(a) encodes a human sel-10 polypeptide having the complete amino acid sequence of SEQ ID NO:4.
6. The nucleic acid molecule of claim 5, wherein said polynucleotide molecule of 1(a) comprises the nucleotide sequence of residues 150-1928 of SEQ ID NO:1.

7. The nucleic acid molecule of claim 1, wherein said polynucleotide of 1(a) encodes a human sel-10 polypeptide having the complete amino acid sequence of SEQ ID NO:5.

5 8. The nucleic acid molecule of claim 7, wherein said polynucleotide molecule of 1(a) comprises the nucleotide sequence of residues 267-1928 of SEQ ID NO:1.

9. The nucleic acid molecule of claim 1, wherein said polynucleotide of 1(a) encodes a human sel-10 polypeptide having the complete amino acid sequence of SEQ ID 10 NO:6.

10 10 The nucleic acid molecule of claim 9, wherein said polynucleotide molecule of 1(a) comprises the nucleotide sequence of residues 291-1928 of SEQ ID NO:1.

15 11. The nucleic acid molecule of claim 1, wherein said polynucleotide of 1(a) encodes a human sel-10 polypeptide having the complete amino acid sequence of SEQ ID NO:7.

12. The nucleic acid molecule of claim 11, wherein said polynucleotide 20 molecule of 1(a) comprises the nucleotide sequence of residues 306-1928 of SEQ ID NO:1.

13. The nucleic acid molecule of claim 1, wherein said polynucleotide of 1(b) encodes a human sel-10 polypeptide having the complete amino acid sequence of SEQ ID NO:8.

25 14. The nucleic acid molecule of claim 13 wherein said polynucleotide molecule of 1(b) comprises the nucleotide sequence of residues 180-1949 of SEQ ID NO:2.

15. The nucleic acid molecule of claim 1, wherein said polynucleotide of 1(b) 30 encodes a human sel-10 polypeptide having the complete amino acid sequence of SEQ ID NO:9.

16. The nucleic acid molecule of claim 15, wherein said polynucleotide molecule of 1(b) comprises the nucleotide sequence of residues 270-1949 of SEQ ID NO:2.

5 17. The nucleic acid molecule of claim 1, wherein said polynucleotide of 1(b) encodes a human sel-10 polypeptide having the complete amino acid sequence of SEQ ID NO:10.

10 18. The nucleic acid molecule of claim 17, wherein said polynucleotide molecule of 1(b) comprises the nucleotide sequence of residues 327-1949 of SEQ ID NO:2.

19. A vector comprising the nucleic acid molecule of claim 1.

15 20. The vector of claim 19, wherein said nucleic acid molecule of claim 1 is operably linked to a promoter for the expression of a sel-10 polypeptide.

21. A host cell comprising the vector of claim 19.

20 22. The host cell of claim 21, wherein said host is a eukaryotic host.

23. A method of obtaining a sel-10 polypeptide comprising culturing the host cell of claim 22 and isolating said sel-10 polypeptide.

25 24. An isolated sel-10 polypeptide comprising

(a) an amino acid sequence selected from the group consisting of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, and SEQ ID NO:7, or as encoded by the cDNA clone contained in ATCC Deposit No. 98978;

30 (b) an amino acid sequence selected from the group consisting of SEQ ID NO:8, SEQ ID NO:9, and SEQ ID NO:10, or as encoded by the cDNA clone contained in ATCC Deposit No. 98979.

25. The isolated sel-10 polypeptide of claim 24, wherein said polypeptide comprises the amino acid sequence of SEQ ID NO:3.

26. The isolated sel-10 polypeptide of claim 24, wherein said polypeptide comprises the amino acid sequence of SEQ ID NO:4.

5 27. The isolated sel-10 polypeptide of claim 24, wherein said polypeptide comprises the amino acid sequence of SEQ ID NO:5.

28. The isolated sel-10 polypeptide of claim 24, wherein said polypeptide comprises the amino acid sequence of SEQ ID NO:6.

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29. The isolated sel-10 polypeptide of claim 24, wherein said polypeptide comprises the amino acid sequence of SEQ ID NO:7.

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30. The isolated sel-10 polypeptide of claim 24, wherein said polypeptide comprises the amino acid sequence of SEQ ID NO:8.

31. The isolated sel-10 polypeptide of claim 24, wherein said polypeptide comprises the amino acid sequence of SEQ ID NO:9.

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32. The isolated sel-10 polypeptide of claim 24, wherein said polypeptide comprises the amino acid sequence of SEQ ID NO:10.

33. An isolated antibody that binds specifically to the sel-10 polypeptide of claim 24.

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34. A cell line having altered A $\beta$  processing that expresses any of the sel-10 isolated nucleic acid molecules of claim 1.

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35. The cell line of claim 34, wherein said A $\beta$  processing is increased.

36. The cell line of claim 34, wherein said A $\beta$  processing is decreased.

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37. The cell line of claim 34, wherein said cell line is 6myc-N-sel10/2.

38. The cell line of claim 34, wherein said cell line is 6myc-N-sel10/6.

39. A method for the identification of an agent capable of altering the ratio of  
5  $A\beta_{1-40}/ A\beta_{1-40} + A\beta_{1-42}$  produced in any of the cell lines of claims 34, 37, and 38,  
comprising the steps of:

- (a) obtaining a test culture and a control culture of said cell line;
- (b) contacting said test culture with a test agent;
- (c) measuring the levels of  $A\beta_{1-40}$  and  $A\beta_{1-42}$  produced by said test  
10 culture of step (b) and said control culture;
- (d) calculating the ratio of  $A\beta_{1-40}/ A\beta_{1-40} + A\beta_{1-42}$  for said test culture  
and said control culture from the levels of  $A\beta_{1-40}$  and  $A\beta_{1-42}$  measured in step (c); and
- (e) comparing the ratio of  $A\beta_{1-40}/ A\beta_{1-40} + A\beta_{1-42}$  measured for said test  
culture and said control culture in step (d);

15 whereby a determination that the ratio of  $A\beta_{1-40}/ A\beta_{1-40} + A\beta_{1-42}$  for said test culture is  
higher or lower than ratio of  $A\beta_{1-40}/ A\beta_{1-40} + A\beta_{1-42}$  for said control culture indicates that  
said test agent has altered the ratio of  $A\beta_{1-40}/ A\beta_{1-40} + A\beta_{1-42}$ .

40. The method of claim 39, wherein said ratio of  $A\beta_{1-40}/ A\beta_{1-40} + A\beta_{1-42}$  is  
20 increased by said test agent.

41. The method of claim 39, wherein said ratio of  $A\beta_{1-40}/ A\beta_{1-40} + A\beta_{1-42}$  is  
decreased by said test agent.